



## DEPARTMENT OF ENERGY

### 10 CFR Parts 429 and 430

[EERE-2019-BT-TP-0024]

RIN 1904-AE51

### Energy Conservation Program: Test Procedure for Ceiling Fan Light Kits

**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

**ACTION:** Notice of proposed rulemaking and announcement of public meeting.

**SUMMARY:** The U.S. Department of Energy (“DOE”) proposes to amend the test procedure for ceiling fan light kits (“CFLKs”). DOE proposes to update references to industry standards to their latest versions and incorporate industry standards necessary for executing the test; to allow for the use of a goniophotometer; to revise definitions regarding CFLKs with solid-state lighting (“SSL”) light sources to clarify the scope and test methods for CFLKs; and to remove obsolete provisions. DOE is seeking comment from interested parties on the proposal.

**DATES:** DOE will accept comments, data, and information regarding this proposal no later than [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]. See section V, “Public Participation,” for details. DOE will hold a webinar on Monday, April 11, 2022, from 1:00 p.m. to 2:30 p.m. See section V, “Public Participation,” for webinar registration information, participant instructions, and information about the capabilities available to webinar participants. If no participants register for the webinar, it will be cancelled.

**ADDRESSES:** Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at [www.regulations.gov](http://www.regulations.gov), under docket number EERE–2019–BT– TP-0024. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments by e-mail to [CFLK2019TP0024@ee.doe.gov](mailto:CFLK2019TP0024@ee.doe.gov). Include docket number EERE–2019–BT– TP-0024 in the subject line of the message. No telefacsimiles (“faxes”) will be accepted. For detailed instructions on submitting comments and additional information on this process, see section V of this document.

Although DOE has routinely accepted public comment submissions through a variety of mechanisms, including postal mail and hand delivery/courier, the Department has found it necessary to make temporary modifications to the comment submission process in light of the ongoing coronavirus 2019 (“COVID-19”) pandemic. DOE is currently suspending receipt of public comments via postal mail and hand delivery/courier. If a commenter finds that this change poses an undue hardship, please contact Appliance Standards Program staff at (202) 586-1445 to discuss the need for alternative arrangements. Once the COVID-19 pandemic health emergency is resolved, DOE anticipates resuming all of its regular options for public comment submission, including postal mail and hand delivery/courier.

*Docket:* The docket, which includes *Federal Register* notices, public meeting attendee lists and transcripts (if a public meeting is held), comments, and other supporting documents/materials, is available for review at [www.regulations.gov](http://www.regulations.gov). All documents in the docket are listed in the [www.regulations.gov](http://www.regulations.gov) index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

The docket web page can be found at [www.regulations.gov/docket?D=EERE-2019-BT-TP-0024](http://www.regulations.gov/docket?D=EERE-2019-BT-TP-0024). The docket web page contains instructions on how to access all documents, including public comments, in the docket. See section V for information on how to submit comments through [www.regulations.gov](http://www.regulations.gov).

**FOR FURTHER INFORMATION CONTACT:**

Dr. Stephanie Johnson, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE-2J, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 287-1943. E-mail [ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov).

Ms. Amelia Whiting, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 586-2588. E-mail: [Amelia.Whiting@hq.doe.gov](mailto:Amelia.Whiting@hq.doe.gov).

For further information on how to submit a comment, review other public comments and the docket, or participate in a public meeting (if one is held), contact the Appliance and Equipment Standards Program staff at (202) 287-1445 or by e-mail: [ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov).

**SUPPLEMENTARY INFORMATION:**

DOE proposes to maintain a previously approved incorporation by reference and to incorporate by reference the following industry standards into 10 CFR part 430:

ANSI/IES LM-9-20—Approved Method: Electrical and Photometric Measurement of Fluorescent Lamps, Approved February 7, 2020 (“IES LM-9-20”).

ANSI/IES LM-54-20—Approved Method: IES Guide to Lamp Seasoning,  
Approved February 7, 2020 (“IES LM-54-20”).

IESNA LM-75-01/R12— Goniophotometer Types and Photometric Coordinates,  
Approved August 4, 2001.

IES LM-78-17— Approved Method: Total Flux Measurement of Lamps Using  
an Integrating Sphere, Approved January 9, 2017.

ANSI/IES LM-78-20— Approved Method: Total Luminous Flux Measurement  
of Lamps Using an Integrating Sphere Photometer, Approved February 7, 2020  
 (“IES LM-78-20”).

ANSI/IES LM-79-19—Approved Method: Optical and Electrical Measurements  
of Solid-State Lighting Products, Approved February 28, 2019 (“IES LM-79-  
19”).

Copies of IES LM-9-20, IES LM-54-20, IESNA LM-75-01/R12, IES LM-78-17,  
IES LM-78-20, and IES LM-79-19 can be obtained by going to <https://www.ies.org/store>.

For a further discussion of these standards, see section IV.M.

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## **I. Authority and Background**

DOE's energy conservation standards and test procedures for CFLKs are currently prescribed at title 10 of the Code of Federal Regulations ("CFR"), part 430 section 32(s), 10 CFR part 430, subpart B, appendix V ("Appendix V"), and 10 CFR part 430, subpart B, appendix V1 ("Appendix V1"). The following sections discuss DOE's

authority to establish test procedures for CFLKs and relevant background information regarding DOE’s consideration of test procedures for this product.

#### *A. Authority*

The Energy Policy and Conservation Act, as amended (“EPCA”),<sup>1</sup> authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part B<sup>2</sup> of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles, which sets forth a variety of provisions designed to improve energy efficiency. These products include CFLKs, the subject of this document. (42 U.S.C. 6291(50), 42 U.S.C. 6293(16)(A)(ii), 42 U.S.C. 6295(ff)(2)-(5))

The energy conservation program under EPCA consists essentially of four parts: (1) testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of EPCA specifically include definitions (42 U.S.C. 6291), test procedures (42 U.S.C. 6293), labeling provisions (42 U.S.C. 6294), energy conservation standards (42 U.S.C. 6295), and the authority to require information and reports from manufacturers (42 U.S.C. 6296).

The Federal testing requirements consist of test procedures that manufacturers of covered products must use as the basis for: (1) certifying to DOE that their products comply with the applicable energy conservation standards adopted pursuant to EPCA (42 U.S.C. 6295(s)), and (2) making other representations about the efficiency of those consumer products (42 U.S.C. 6293(c)). Similarly, DOE must use these test procedures

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<sup>1</sup> All references to EPCA in this document refer to the statute as amended through the Infrastructure Investment and Jobs Act, Pub. L. 117-58 (Nov. 15, 2021).

<sup>2</sup> For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

to determine whether the products comply with relevant standards promulgated under EPCA. (42 U.S.C. 6295(s))

Federal energy efficiency requirements for covered products established under EPCA generally supersede State laws and regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6297) DOE may, however, grant waivers of Federal preemption for particular State laws or regulations, in accordance with the procedures and other provisions of EPCA. (42 U.S.C. 6297(d))

Under 42 U.S.C. 6293, EPCA sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered products. EPCA requires that any test procedures prescribed or amended under this section be reasonably designed to produce test results which measure energy efficiency, energy use or estimated annual operating cost of a covered product during a representative average use cycle or period of use and not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

EPCA, as codified, directs DOE to establish test procedures for CFLKs based on the test procedures referenced in the Energy Star specifications for Residential Light Fixtures and Compact Fluorescent Light Bulbs, as in effect on August 8, 2005. EPCA also specifies that once established, DOE may review and revise the test procedures. (42 U.S.C. 6293(b)(16))

EPCA also requires that, at least once every 7 years, DOE evaluate test procedures for each type of covered product, including CFLKs, to determine whether amended test procedures would more accurately or fully comply with the requirements for the test procedures to not be unduly burdensome to conduct and be reasonably

designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs during a representative average use cycle or period of use. (42 U.S.C. 6293(b)(1)(A))

If the Secretary determines, on her own behalf or in response to a petition by any interested person, that a test procedure should be prescribed or amended, the Secretary shall promptly publish in the *Federal Register* proposed test procedures and afford interested persons an opportunity to present oral and written data, views, and arguments with respect to such procedures. The comment period on a proposed rule to amend a test procedure shall be at least 60 days and may not exceed 270 days. In prescribing or amending a test procedure, the Secretary shall take into account such information as the Secretary determines relevant to such procedure, including technological developments relating to energy use or energy efficiency of the type (or class) of covered products involved. (42 U.S.C. 6293(b)(2)). If DOE determines that test procedure revisions are not appropriate, DOE must publish its determination not to amend the test procedures. (42 U.S.C. 6293(b)(1)(A)(ii))

In addition, EPCA requires that DOE amend its test procedures for all covered products to integrate measures of standby mode and off mode energy consumption. (42 U.S.C. 6295(gg)(2)(A)) Standby mode and off mode energy consumption must be incorporated into the overall energy efficiency, energy consumption, or other energy descriptor for each covered product unless the current test procedures already account for and incorporate standby and off mode energy consumption or such integration is technically infeasible. If an integrated test procedure is technically infeasible, DOE must prescribe a separate standby mode and off mode energy use test procedure for the covered product, if technically feasible. (42 U.S.C. 6295(gg)(2)(A)(ii)) Any such



amendment must consider the most current versions of the International Electrotechnical Commission (“IEC”) Standard 62301<sup>3</sup> and IEC Standard 62087<sup>4</sup> as applicable. (42 U.S.C. 6295(gg)(2)(A))

DOE is publishing this notice of proposed rulemaking (“NOPR”) in satisfaction of the 7-year review requirement specified in EPCA. (42 U.S.C. 6293(b)(1)(A))

### *B. Background*

DOE’s existing test procedure for CFLKs appears at title 10 of the CFR part 430, subpart B, appendix V (“Uniform Test Method for Measuring the Energy Consumption of Ceiling Fan Light Kits With Pin-Based Sockets for Fluorescent Lamps”) and title 10 of the CFR part 430, subpart B, appendix V1 (“Uniform Test Method for Measuring the Energy Consumption of Ceiling Fan Light Kits Packaged With Other Fluorescent Lamps (not Compact Fluorescent Lamps or General Service Fluorescent Lamps), Packaged With Other SSL Lamps (not Integrated LED [light-emitting diode] Lamps), or With Integrated SSL Circuitry”).

On December 24, 2015, DOE published a final rule (“December 2015 Final Rule”) making two key updates to its CFLK test procedure. 80 FR 80209 (Dec. 24, 2015) First, DOE updated the CFLK test procedure to require that representations of efficacy, including certifications of compliance with CFLK standards, be made according to the corresponding DOE lamp test procedures, where they exist (*e.g.*, for a CFLK with medium screw base sockets that is packaged with compact fluorescent lamps (“CFLs”), the CFLK test procedure references the DOE test procedure for CFLs at 10 CFR

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<sup>3</sup> IEC 62301, *Household electrical appliances—Measurement of standby power* (Edition 2.0, 2011-01).

<sup>4</sup> IEC 62087, *Audio, video and related equipment—Methods of measurement for power consumption* (Edition 1.0, Parts 1–6: 2015, Part 7: 2018). 1-04).

430.23(y)). 80 FR 80209, 80211. Second, DOE updated the CFLK test procedure by establishing in a separate appendix, *i.e.*, appendix V1, the test procedure for CFLKs packaged with inseparable light sources that require luminaire efficacy testing (*e.g.*, CFLKs with integrated SSL circuitry) and for CFLKs packaged with lamps for which DOE test procedures did not exist. 80 FR 80209, 80212. With these changes, the December 2015 Final Rule aligned CFLK requirements for measuring efficacy of lamps and/or light sources in CFLKs with current DOE lamp test procedures.

The December 2015 Final Rule also replaced references to superseded ENERGY STAR requirements with the latest versions of industry standards in appendix V, the test procedure for measuring system efficacy of the lamp-and-ballast platform. Additionally, for ease of reference, the final rule replaced references to ENERGY STAR requirements in existing CFLK standards contained in 10 CFR 430.32(s) with the specific requirements. 80 FR 80209, 80211. Further, in that final rule, DOE determined that it accounts for standby mode energy consumption of CFLKs under the efficiency metric for ceiling fans rather than under the CFLK efficiency metric; and therefore, did not specify a standby mode test procedure for CFLKs. 80 FR 80209, 80212. Representations regarding CFLKs subject to the January 21, 2020 standards must be based on the amended test procedure, including appendix V1.<sup>5</sup> *See* 80 FR 80209, 80220; 81 FR 580 (January 6, 2016); 83 FR 22587 (May 16, 2018).

On August 6, 2021, DOE published a NOPR amending the certification requirements for CFLKs (“August 2021 NOPR”). 86 FR 43120 (Aug. 6, 2021) In the

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<sup>5</sup> DOE published a final rule that changed the compliance date from January 7, 2019 to January 21, 2020 to comply with Public Law 115-161, “Ceiling Fan Energy Conservation Harmonization Act” (the “Act”), which was signed into law on April 3, 2018. 83 FR 22587 (May 16, 2018). The Act amended the compliance date for CFLK standards to establish a single compliance date for the energy conservation standards for both CFLKs and ceiling fans. *Id.*

August 2021 NOPR, DOE proposed to update the reporting requirements for CFLKs to address the January 21, 2020 standards and remove the reporting requirements for the January 1, 2007 standards. The August 2021 NOPR proposed to align the CFLK certification reporting requirements at 10 CFR 429.33 with the CFLK energy conservation standards relating to: (a) efficacy for light sources in CFLKs; (b) lumen maintenance, lifetime, and rapid cycle stress testing for medium screw base CFLs in CFLKs; (c) electronic ballasts for pin-based fluorescent lamps in CFLKs; (d) test sample size; and (e) kind of lamp. 86 FR 43126, 43128.

EPCA requires DOE to review test procedures for covered products at least once every 7 years. 42 U.S.C. 6293(b)(1)(A) DOE initiated the first step in the 7 year review process by publishing a request for information (“RFI”) document on May 4, 2021 (“May 2021 RFI”), which identified specific issues on which DOE seeks input to aid in its analysis of whether an amended test procedure for CFLKs would more accurately or fully comply with the requirement that the test procedure produces results that measure energy use during a representative average use cycle for the product, and not be unduly burdensome to conduct. 86 FR 23635.

DOE received comments in response to the May 2021 RFI from the interested parties listed in Table I.1.

**Table I.1 List of Commenters with Written Submissions in Response to the May 2021 RFI**

<b>Commenter(s)</b>	<b>Reference in this NOPR</b>	<b>Commenter Type</b>
kecaph	kecaph	Private Citizen
American Lighting Association	ALA	Trade Association
California Investor-Owned Utilities	CA IOUs	Utilities

A parenthetical reference at the end of a comment quotation or paraphrase provides the location of the item in the public record.<sup>6</sup>

### *C. Deviation from Appendix A*

In accordance with section 3(a) of 10 CFR part 430, subpart C, appendix A (“appendix A”), DOE notes that it is deviating from the provision in appendix A regarding publication of an additional pre-NOPR rulemaking document. Section 8(b) of appendix A. DOE is opting to deviate from this step because, as discussed in the following section DOE’s proposal is limited to updating the referenced version of the applicable industry standard, proposing certain terminology changes, and deleting an obsolete reference. DOE has tentatively determined the proposals do not require consideration of test data or market data that would typically be requested through an additional pre-NOPR rulemaking document, such as an RFI or notice of data availability.

## **II. Synopsis of the Notice of Proposed Rulemaking**

In this NOPR, DOE proposes to update 10 CFR 430.23(x), appendix V, and appendix V1 as follows: (1) update references to industry standards to their latest versions and incorporate industry standards necessary for executing the test; (2) modify appendix V1 to allow for the use of a goniophotometer; (3) revise definitions regarding CFLKs with SSL light sources in appendix V1 to clarify the scope and test methods for CFLKs; and (4) remove appendix V, the test procedure that must be used for CFLKs with

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<sup>6</sup> The parenthetical reference provides a reference for information located in the docket of DOE’s rulemaking to develop test procedures for CFLKs. (Docket No. EERE-2019-BT-TP-0024, which is maintained at [www.regulations.gov](http://www.regulations.gov)). The references are arranged as follows: (commenter name, comment docket ID number at page of that document).

pin-based sockets that are manufactured on or after January 1, 2007, and prior to January 21, 2020 and rename appendix V1 as appendix V.

DOE's proposed actions are summarized in Table II.1 compared to the current test procedure as well as the reason for the proposed change.

**Table II.1 Summary of Changes in Proposed Test Procedure Relative to Current Test Procedure**

<b>Current DOE Test Procedure</b>	<b>Proposed Test Procedure</b>	<b>Attribution</b>
References the 2009 version of IES LM-9 for taking electrical and photometric measurement of fluorescent lamps in appendix V1.	Adopts the latest version, <i>i.e.</i> , 2020, of the referenced industry standard.	Harmonize with updated industry standards.
References the 2008 version of IES LM-79, which provides methods for taking electrical and photometric measurements of SSL products in appendix V1.	Adopts the latest version, <i>i.e.</i> , 2019, of the referenced industry standard.	Harmonize with updated industry standards.
Does not incorporate IES LM-54, the industry standard for lamp seasoning, in appendix V1.	Adopts IES LM-54 which is referenced for lamp seasoning in IES LM-9.	Industry standard addition in test procedure.
Does not incorporate IES LM-78, the industry standard for measurements in an integrating sphere, in appendix V1.	Adopts IES LM-78-20 which is referenced for integrating sphere measurements in IES LM-9 and adopts IES LM-78-17 which is referenced for integrating sphere measurements in IES LM-79.	Industry standard addition in test procedure.
Defines "CFLK with integrated SSL circuitry" and "other SSL products" in appendix V1.	Updates the term names and definitions for "CFLK with integrated SSL circuitry" and "other SSL products," to "CFLK with non-consumer-replaceable SSL circuitry" and "CFLK with consumer-replaceable SSL circuitry," respectively. Updates the definitions for these terms.	Clarifies the categories CFLK products fall into, and thereby the test methods ( <i>i.e.</i> , luminaire or lamp efficacy) to which they are subject.
References appendix V and appendix V1.	Removes appendix V.	Removes a section of the test procedure that is no longer applicable.
Does not allow the use of a goniophotometer.	Allows the use of a goniophotometer and adopts IESNA LM-75, which is referenced for goniophotometer measurements in IES LM-79.	Allows manufacturers flexibility in testing.

DOE has tentatively determined that the proposed amendments described in section III of this NOPR would not alter the measured efficiency of CFLKs or require retesting or recertification solely as a result of DOE's adoption of the proposed amendments to the test procedures, if made final. DOE has tentatively determined that the proposed amendments described in section III of this NOPR are reasonably designed

to more accurately measure energy efficiency for CFLKs during a representative average use cycle and are not overly burdensome to conduct. Additionally, DOE has tentatively determined that the proposed amendments, if made final, would not increase the cost of testing. Discussion of DOE's proposed actions are addressed in detail in section III of this NOPR.

### **III. Discussion**

Although the May 2021 RFI requested comments, information and data regarding several specific issues, DOE welcomed written comments from the public on any subject within the scope of the document (including topics not raised in the RFI). In response to the May 2021 RFI, DOE received several general comments. Kecaph stated that ceiling fan lights need to be inspected and that the public is not going to pay for light fixtures that are not working properly. (kecaph, No. 2 at p. 1) Regarding early assessment RFIs, the CA IOUs reiterated their recent comments to DOE's NOPR on Procedures, Interpretations, and Policies for Consideration in New or Revised Energy Conservation Standards and Test Procedures for Consumer Products and Commercial/Industrial Equipment ("Process Rule"). The CA IOUs generally supported DOE's proposal to remove inactive components of the test procedure and update references to industry resources, but the CA IOUs believed that early assessment RFIs are largely unnecessary. Instead, the CA IOUs recommended that DOE return to the publication of a RFI as the first step of a rulemaking. (CA IOUs, No. 3 at pp. 1-2)

As stated in section I.A, DOE is publishing this NOPR to satisfy the 7-year review requirement specified in EPCA to review test procedures for CFLKs. The scope of this NOPR does not cover inspection of installed ceiling fan lights, but rather

addresses how to measure their energy efficiency. The scope of this notice also does not cover changes to the Process Rule. More information regarding updates to the Process Rule can be found on [www.regulations.gov](http://www.regulations.gov) under docket number EERE-2021-BT-STD-0003-0044.

ALA stated that it strongly supported that all assessments of standby power continue to be calculated with the ceiling fan's standby power. (ALA, No. 4 at p. 2) As discussed in section I.B of this document, DOE determined in the December 2015 Final Rule that standby mode energy consumption of CFLKs is accounted for under the efficiency metric for ceiling fans, rather than under the CFLK efficiency metric; and therefore did not specify a standby mode test procedure for CFLKs. 80 FR 80209, 80212. DOE continues to find this determination valid and therefore is not proposing a standby mode test procedure for CFLKs in this NOPR.

#### *A. Scope of Applicability*

This rulemaking addresses the DOE test procedure for CFLKs. DOE defines CFLKs as follows:

*Ceiling fan light kit* means equipment designed to provide light from a ceiling fan that can be - (1) Integral, such that the equipment is attached to the ceiling fan prior to the time of retail sale; or (2) Attachable, such that at the time of retail sale the equipment is not physically attached to the ceiling fan, but may be included inside the ceiling fan at the time of sale or sold separately for subsequent attachment to the fan.

The scope of the test procedure in appendix V1 covers fluorescent lamps other than compact fluorescent lamps or general service fluorescent lamps, SSL products other than integrated LED lamps, or integrated SSL circuitry packaged with CFLKs. To support the test procedure for CFLKs the following terms are defined in appendix V1: “CFLK with integrated SSL circuitry,” “Covers,” “Other (non-CFL and non-GSFL) fluorescent lamp,” “Other SSL products,” and “Solid-State Lighting (SSL).” In the definitions of “Other SSL products” and “SSL”, DOE cites organic light-emitting diode (“OLEDs”) as an example of a type of light source that uses SSL technology.

ALA stated that no manufacturers have any plans to use OLEDs in CFLKs. (ALA, No. 4 at p. 2) DOE has included OLEDs as an example of SSL technology because it is a type of light source that may be used in CFLKs, even if it is not at present. Therefore, DOE maintains the use of OLEDs as examples of an SSL product, to ensure there is an applicable test procedure for these products.

### *B. Updates to Industry Standards*

The current DOE test procedure for CFLKs in appendix V1 specifies instructions for measuring the lamp efficacy or luminaire efficacy, as applicable. Appendix V1 incorporates by reference the 2009 version of Illuminating Engineering Society (“IES”) Lighting Measurement and Testing (“LM”)-9 (“IES LM-9-09”<sup>7</sup>) for testing “other fluorescent lamps” (*i.e.*, not CFLs or general service fluorescent lamps (“GSFLs”)) and the 2008 version of IES LM-79 (“IES LM-79-08”<sup>8</sup>) for testing “other SSL products” (*i.e.*, not integrated LED lamps) and CFLKs with integrated SSL circuitry. Appendix V1 references these industry standards for test conditions and measurements. These

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<sup>7</sup> Illuminating Engineering Society, *IES LM-9-09 IES Approved Method: Electrical and Photometric Measurement of Fluorescent Lamps*. Approved January 31, 2009.

<sup>8</sup> Illuminated Engineering Society, *IES LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products*. Approved December 31, 2007.



referenced industry test standards have been updated by industry since DOE last amended its test procedures. IES LM-9-09 has been updated with a 2020 version<sup>9</sup> (IES LM-9-20) and IES LM-79-08 has been updated with a 2019 version<sup>10</sup> (IES LM-79-19). In addition, DOE is proposing to incorporate by reference IES LM-54- 20<sup>11</sup>, IESNA LM-75-01/R12<sup>12</sup>, IES LM-78-20,<sup>13</sup> and IES LM-78-17<sup>14</sup> for appendix V1. DOE received several comments on how the changes in the updated versions of these standards would impact DOE's test procedure for CFLKs.

The CA IOUs suggested, regarding IES LM-9, LM-54, LM-78, LM-79, and any other lighting industry test procedures referenced in the DOE test procedure, that DOE communicate directly with the sponsoring bodies to obtain information regarding the impacts of the proposed changes to the referenced industry standards. The CA IOUs suggested that, in the absence of such information, DOE commission testing of CFLKs using currently referenced industry standards and proposed updates to referenced industry standards to make an independent determination. (CA IOUs, No. 3 at p. 2)

ALA stated that all the LM methods identified in the May 2021 RFI are simply updated American National Standards Institute ("ANSI") accredited versions of LMs currently used. ALA further stated that it typically supports updating standards that are backed by ANSI and have no initial concerns with making these updates as long as there

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<sup>9</sup> Illuminating Engineering Society, *ANSI/IES LM-9-20 Approved Method: Electrical and Photometric Measurement of Fluorescent Lamps*. Approved February 7, 2020.

<sup>10</sup> Illuminating Engineering Society, *ANSI/IES LM-79-19 Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products*. Approved February 28, 2019.

<sup>11</sup> Illuminating Engineering Society, *ANSI/IES LM-54-20 Approved Method: IES Guide to Lamp Seasoning*. Approved February 7, 2020.

<sup>12</sup> Illuminated Engineering Society of North America, *IESNA LM-75-01/R12 Goniophotometer Types and Photometric Coordinates*. Approved August 4, 2001.

<sup>13</sup> Illuminating Engineering Society, *ANSI/IES LM-78-20 Approved Method: Total Luminous Flux Measurement of Lamps Using an Integrating Sphere Photometer*. Approved February 7, 2020.

<sup>14</sup> Illuminating Engineering Society of North America, *IES LM-78-17 IES Approved Method for Total Flux Measurement of Lamps Using an Integrating Sphere*. Approved January 9, 2017.

is no meaningful difference in the measured value. (ALA, No. 4 at p. 1) ALA stated that ALA's CFLK manufacturers do not have data to share that shows the difference between current LMs and updated LMs since their members focus their testing on what is currently required under regulations. (ALA, No. 4 at p. 1) ALA stated that their members have heard from other fixture and light source manufacturers that the measurable differences are insignificant. ALA stated that if pre-rulemaking testing proves otherwise and results in excessive retesting, ALA CFLK manufacturers will oppose updates to the LMs as it will be costly and time consuming. (ALA, No. 4 at pp. 1-2)

DOE has tentatively concluded that the proposed updates to industry test standard references do not involve substantive changes to the test setup and methodology and therefore do not pose additional test burden and will have no impact on test costs. Further, DOE has tentatively determined that incorporation by reference of the latest versions will not change measured values, better aligns DOE test procedures with industry practice, and further increases the clarity of the test methods. DOE requests comment on its assessments of the impacts of incorporating by reference IES LM-9-20, IES LM-54-20, IESNA LM-75-01/R12, IES LM-79-19, IES LM-78-20, and IES LM-78-17 for appendix V1. Each proposed industry test standard is discussed in the following sections.

#### 1. IES LM-9

IES LM-9 provides methods for taking electrical and photometric measurements of fluorescent lamps. DOE's initial review indicates no major changes in IES LM-9-20 compared to IES LM-9-09, except for updates to certain relevant references. Firstly,

section 6.2 of IES LM-9-20 updates its reference of IES LM-54, the industry standard for lamp seasoning, from the 1999 version<sup>15</sup> (“IESNA LM-54-99”) to the 2020 version (IES LM-54-20). Secondly, section 7.0 of IES LM-9-20 updates its references of IES LM-78, the industry standard for measurements in an integrating sphere, from the 2007 version<sup>16</sup> (“IESNA LM-78-07”) to the 2020 version (IES LM-78-20). DOE has tentatively concluded that updates in IES LM-9-20 would not change final measured values and proposes to update references from the 2009 version of IES LM-9 to the 2020 version in appendix V1. These updates are discussed in detail in the following sections.

Because lamp seasoning is a necessary part of testing fluorescent lamps in CFLKs, DOE is proposing to incorporate by reference IES LM-54-20 for appendix V1 and to reference it when referencing IES LM-9-20 in appendix V1. Because an integrating sphere is a method used to make necessary photometric measurements of fluorescent lamps in CFLKs, DOE is proposing to incorporate by reference IES LM-78-20 for appendix V1 and to reference it when referencing IES LM-9-20 directly in appendix V1.

a) IES LM-54

IES LM-54 is the industry standard for lamp seasoning. Appendix V1 currently references sections of IES LM-9-09, which reference IESNA LM-54-99. The 2020 version of IES LM-9, proposed for incorporation by reference for appendix V1 in this notice, updated this reference to IES LM-54-20. The 2020 version of IES LM-54 adds numerous new sections, which codify best practices, that labs are likely already

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<sup>15</sup> Illuminating Engineering Society of North America, *LM-54-99 IESNA Guide to Lamp Seasoning*, Approved May 10, 1999.

<sup>16</sup> Illuminating Engineering Society of North America, *IESNA LM-78-07 IESNA Approved Method for Total Luminous Flux Measurement of Lamps Using an Integrating Sphere Photometer*. Approved January 28, 2007.

following. Specifically, IES LM-54-20 adds section 4.0 on physical environment test conditions that covers topics such as keeping labs clean and within the ambient temperature range; not subjecting lamps to excessive vibration/shock; and using airflow to cool the seasoning area. IES LM-54-20 also adds section 5.0 on electrical test conditions, which includes instructions on frequency, voltage wave shape, and voltage regulation; basic lamp connection protocols; and setting up an adjacent ground for fluorescent lamps. Additionally, IES LM-54-20 includes new section 6.1 on test preparation which addresses how to handle and mark lamps. Finally, IES LM-54-20 adds a statement in section 6.2.1.1 expressly stating that the orientation of the lamp during seasoning should be maintained for the entire test.

Based on DOE's knowledge of third party labs, DOE understands that the added instructions in IES LM-54-20 regarding the appropriate physical conditions of the lab, test setup for taking electrical measurements, and marking and handling the lamps physical environment conditions are basic steps followed by labs when conducting testing. These basic instructions are also included in most up to date industry standards. Therefore, DOE has tentatively determined that the additions in IES LM-54-20 are industry best practices for taking lamp measurements, and therefore likely are already being followed by laboratories. DOE has tentatively concluded that the changes in IES LM-54-20 will allow for further accuracy in testing but will not impact final measured values of efficacy.

#### b) IES LM-78

IES LM-78 is the industry standard for taking measurements in an integrating sphere. Appendix V1 currently references sections of IES LM-9-09 which reference

IESNA LM-78-07. The 2020 version of IES LM-9, proposed for incorporation by reference for appendix V1 in this NOPR, has updated this reference to IES LM-78-20.

DOE identified several changes in the 2020 version of IES LM-78 compared to the 2007 version, including additions in the 2020 version that are not in 2007 version. The 2020 version includes a discussion of spectral measurements, in new sections 7.1.2 and 7.2.2, on taking measurements with a spectroradiometer within a sphere. Section 5.1 and 5.2 of IES LM-78-20 also provides specific sections on  $2\pi$  and  $4\pi$  geometry, respectively. For  $4\pi$  geometry, the 2020 version adds the specification that the total surface area of the lamp should be less than 2 percent of the total area of the sphere wall. Section 5.3 of IES LM-78-20 adds an explanation on using sphere angular response distribution function (“SRDF”) to assess sphere responsivity. Further, in Section 7.2 of IES LM-78-20 the equation to compute luminous flux now includes subtraction of dark/stray light, a ratio of spectral mismatch correction factor to self-absorption factor, and the sphere angular non-uniformity correction factor.

These additions do not change the existing method of taking lumen measurements with an integrating sphere and only add additional techniques that manufacturers could use if they choose to do so, such as using a spectroradiometer,  $4\pi$  geometry,  $2\pi$  geometry, or the SRDF function to determine sphere responsivity. Further, Section 6.2.1 and Section 6.3.2 of IESNA LM-78-07 also directed that stray light and spectral mismatch correction, respectively should be accounted for in taking lumen measurements. Section 7.0 of IES LM-78-20 only explicitly incorporates these factors into the total luminous flux equation. DOE has tentatively concluded that the additional information in IES LM-78-20 is reflective of industry learning and making more accurate and consistent

measurements using the integrating sphere, but will not impact final measured values of efficacy.

DOE also identified updates to specifications in IESNA LM-78-07. Section 5.1 of IES LM-78-20 states the sphere diameter shall be 1.5 times the length of a linear lamp, whereas it was specified as 2 times the length in Section 6.3.7 of IESNA LM-78-07. Section 5.6 of IES LM-78-20 also states for the degree of the spectral match to the  $V(\lambda)$  function, it is preferable that the value of the photometer be less than 3 percent, whereas it was less than 5 percent in Section 3.5 of IESNA LM-78-07. Throughout IES LM-78-20, the term “spatial luminous intensity” is replaced with “angular luminous intensity”. The updated standard has replaced “spatial” with “angular” to more clearly describe that light is being measured by angles.<sup>17</sup> Finally, in Section 8.0 of IES LM-78-20, the uncertainty analysis section has been condensed to a list of potential sources of errors and references to other industry standards for guidance.

The change in sphere diameter will have a minimal impact on the size of the sphere used and subsequently on the test setup inside the sphere and measurements. The change in the degree of spectral match to the  $V(\lambda)$  function is a minor adjustment to a correction factor in measurement and as such will result in more accurate testing, but will not change the final measured value. Finally, the reorganization of the uncertainty analysis section has minimal impact. DOE has tentatively concluded that the updates to sphere diameter and spectral match tolerance will allow for further accuracy in testing and will not impact final measured values of efficacy.

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<sup>17</sup> The term “spatial luminous intensity” and “angular luminous intensity” have the same meaning in the industry standard.

## 2. IES LM-79

IES LM-79 provides methods for taking electrical and photometric measurements of SSL products. DOE's initial review indicates several changes in IES LM-79-19 compared to IES LM-79-08. Regarding testing conditions, Section 4.2.1 of IES LM-79-19 changes the tolerance of ambient temperature to  $\pm 1.2$  degrees Celsius measured not more than 1.5 meters from the test lamp, whereas in IES LM-79-08, it specified  $\pm 1$  degree Celsius measured from not more than 1 meter. DOE has tentatively concluded that the change in ambient temperature and distance is minor and will not impact final measured values of efficacy.

For instrumentation, Section 5.3.3 of IES LM-79-19 adds specifications that the alternating current ("AC") power analyzer to have a frequency range from direct current ("DC") to at least 100 kilohertz ("kHz") and for products with high-frequency components a frequency range of at least 1 megahertz ("MHz"). Section 5.1.2 of IES LM-79-19 also adds current crest factor capability requirements for the AC power supply. Regarding power supply tolerances, Section 5.1 of IES LM-79-19 adds the following: (1) the supplied frequency to have a tolerance of  $\pm 2$  hertz ("Hz") from the prescribed frequency; and (2) the AC voltage component of the DC regulated voltage to be less than 0.5 percent root mean square ("RMS") of the DC regulated voltage.

Additionally, Section 3.2 of IES LM-79-08 required that the calibration uncertainties of instruments for AC voltage and current be a minimum of 0.2 percent and for the AC power meter be a minimum of 0.5 percent. Section 5.3 of IES LM-79-19 replaces these specifications with expanded uncertainty minimums of: (1) 0.4 percent for RMS AC voltage for 60 Hz sinusoidal waveform measurements; (2) 0.6 percent for RMS

AC current for 0.5 Hz to 1 kHz range and 2 percent for 1 kHz to 100 kHz range; and (3) 1 percent for active AC power in the 0.5 Hz to 1 kHz range and 2 percent in the 1 kHz to 100 kHz range. DOE has tentatively concluded that the additions regarding tolerances of the test instruments and power supply measurements and updates to calibration uncertainties will allow for further accuracy in testing, but will not impact final measured values of efficacy.

For test circuits, Section 5.0 of IES LM-79-19 adds the following specifications: (1) use of separate sense leads to avoid voltage drops; (2) resistance and capacitance of test circuit (excluding power supply) to be less than respectively 0.5 ohms and 1.5 nanofarads; and (3) the internal impedance of voltage measurement circuits (excluding the power meter) to be at least 1 megaohm. DOE has tentatively concluded that the additions regarding the leads, resistance, capacitance and impedance will allow for more stable test circuits and will not impact final measured values of efficacy.

For electrical measurements, Section 5.4 of IES LM-79-19 adds tolerances intervals of +/- 0.5 percent for AC RMS voltage, +/- 0.2 percent for DC voltage and current. It also states optical and electrical waveforms should be analyzed to ensure measurement equipment is appropriate. Section 5.4 of IES LM-79-19 adds a discussion for testing low voltage products, stating that measurements can be taken with a combination of a voltages above and below set value and interpolated to get the required measurement. Section 5.4 of IES LM-79-19 also addresses inrush currents, stating that the AC power supply should begin applying current at zero-phase or, if the product is not capable of a zero-phase start, the AC voltage should be ramped up from 0 volts over a few seconds.<sup>18</sup> DOE has tentatively concluded that the additions regarding the tolerances

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<sup>18</sup> Some SSL products may experience inrush currents, which are high instantaneous currents that occur when the power supply is turned on.



of voltages and analyzing waveforms will allow for further accuracy in testing, but will not impact final measured values of efficacy.

Regarding stability, Section 6.4 of IES LM-79-19 states that to determine stability three readings of light output and electrical power must be taken at 10-minute intervals over 20 minutes. Section 5.0 of IES LM-79-08 required three readings taken at 15-minute intervals over 30 minutes. Section 6.4 of IES LM-79-19 also clarifies that it is the average of the three measurements taken chronologically that should be used to determine the stabilization threshold. Additionally, unlike IES LM-79-08, IES LM-79-19 no longer allows the use of alternative stabilization methods for measurements of a number of products of the same model. Determining an alternative stabilization method that results in total lumens being within 0.5 percent of the value when the normal stabilization method is used would require considerable testing and may need to be reassessed with each basic model. Therefore, DOE has tentatively concluded that disallowing an alternative stabilization method does not change the overall test burden. DOE has tentatively concluded that the changes to the stabilization method will still result in a stabilized lamp and will not impact final measured values of efficacy.

Further, section 7.2 of IES LM-79-19 updates its references of IES LM-78, the industry standard for measurements in an integrating sphere, from the 2007 version (“IESNA LM-78-07”) to the 2017 version (IES LM-78-17). Because an integrating sphere is a method used to make necessary photometric measurements of light sources used in CFLKs, DOE is proposing to incorporate by reference IES LM-78-17 for appendix V1 and to reference it when referencing IES LM-79-19 in appendix V1. Although IES LM-78-17 has been updated to IES LM-78-20, DOE is proposing to incorporate by reference IES LM-78-17 for appendix V1, as it is the version directly

referenced by IES LM-79-19. DOE has tentatively determined that updating IESNA LM-78-07 to IES LM-78-20 will not impact final measured values (see section III.B.1). DOE has also tentatively determined that changes in IES LM-78-20 compared to IES LM-78-17 are minor and do not impact final measured values. Therefore, DOE has tentatively concluded that since updating to IESNA LM-78-07 to IES LM-78-20 does not impact final measured values, updating IESNA LM-78-07 to IES LM-78-17 will also not impact final measured values.

Finally, Section 7.2.2 of IES LM-79-19 adds that the spectroradiometer system have a wavelength uncertainty within 0.5 nanometers. Section 7.3.2 of IES LM-79-19 also adds that for  $2\pi$  geometry the total surface area of the test lamp internal to the sphere should be no more than 1 percent of the total surface area of the sphere. DOE has tentatively concluded that the additional specifications regarding the spectroradiometer will allow for further accuracy in testing, but will not impact final measured values of efficacy.

In summary, DOE has tentatively concluded that updates in IES LM-79-19 would not change final measured values and proposes to update references from the 2008 version of IES LM-79 to the 2019 version in appendix V1. DOE notes that the sections of IES LM-79-08 were reorganized in the 2019 version. Currently, appendix V1 references section 2 through 9.2 of IES LM-79-08, which correspond to sections 4 through 6 and 7.2 of IES LM-79-19. DOE proposes to change the section references of IES LM-79-19 from section 2 through 9.2 to corresponding sections 4 through 6 and 7.2. In addition, because DOE is proposing to allow the use of the goniophotometer method (see section III.C.2 of this document), DOE is also proposing to reference all of section 7.0 of IES LM-79-19 to include sub-sections addressing the goniophotometer method.

Section 7.2 of IES LM-79-19 references IESNA LM-75-01/R12 for general recommendations and requirements on making measurements with goniophotometers. Therefore, DOE is proposing to incorporate by reference IESNA LM-75-01/R12 for appendix V1 and to reference it when referencing IES LM-79-19 in appendix V1.

### *C. Proposed Amendments to Appendix V1*

DOE proposes changes to appendix V1 to clarify definitions regarding CFLKs with SSL light sources and allow for the use of the goniophotometer method to make photometric measurements. DOE also proposes to arrange the definitions in appendix V1 in alphabetical order. Note that the proposed section references of industry test standards are based on the version of the standard proposed for adoption (see section III.B of this document).

#### *1. Revising Definitions for CFLKs with SSL Light Sources*

DOE proposes to revise certain existing terms in appendix V1. Specifically, DOE proposes to replace the terms “CFLK with integrated SSL circuitry” and “other SSL products” respectively, with “CFLK with non-consumer-replaceable SSL circuitry” and “CFLK with consumer-replaceable SSL circuitry” throughout appendix V1; and provide further clarifications in the definitions of these terms.

DOE initiated an analysis of CFLK energy conservation standards by publishing an RFI on June 4, 2021 (“June 2021 RFI”). 86 FR 29954. In response to the June 2021 RFI, ALA recommended that DOE revise the two product classes for standards to align with the current CFLK test procedure that differentiate between LED lamps with an ANSI approved base that are tested individually, and a light kit that incorporates an

integrated LED light source that is tested as a complete unit. (ALA, No. 3 at p. 2<sup>19</sup>) This comment indicates that it is not clear that DOE's CFLK test procedure directs CFLKs with consumer replaceable SSL light sources without ANSI bases to be tested individually using lamp efficacy, similar to the required efficacy measurement for CFLKs with ANSI base lamps. Additionally, information collected in manufacturer interviews as part of the ongoing CFLK standards analysis also indicated that this part of the test procedure may need further clarification. DOE tentatively concluded that the current definitions for "CFLK with integrated circuitry" and "other SSL products" were not clear and could lead to confusion when manufacturers classify products and determine the required efficacy measurement.

Under the current Appendix V1, CFLKs that use SSL circuitry are separated as either a "CFLK with integrated SSL circuitry" or "other SSL products," and have different methods to measure efficacy. A CFLK with integrated SSL circuitry is defined as a CFLK that has SSL light sources, drivers, heat sinks, or intermediate circuitry (such as wiring between a replaceable driver and a replaceable light source) that are not consumer replaceable. Section 2.1 of 10 CFR Part 430 Subpart B Appendix V1. Because the SSL light source in a CFLK with integrated circuitry will require cutting of wires or similar methods to remove and test the light source, it cannot be restored to the same condition it was prior to testing. Hence, DOE directs manufacturers to test and report the efficacy with the light source in the CFLK, *i.e.*, luminaire efficacy. In this NOPR, to further clarify which CFLKs fall into this category, DOE proposes to change the term "CFLK with integrated SSL circuitry" to "CFLK with non-consumer-replaceable SSL circuitry." Further, DOE proposes to modify the definition by specifying that the light

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<sup>19</sup> This comment is in response to the June 2021 RFI and can be found on [www.regulations.gov](http://www.regulations.gov) under Docket ID: EERE-2019-BT-STD-0040.

sources and all necessary components in these CFLKs cannot be replaced without permanently altering the product; and specifying that the light sources in these CFLKs do not have an ANSI base. DOE will continue to require the measurement of luminaire efficacy for these CFLKs. DOE proposes the following definition for “CFLK with non-consumer-replaceable SSL circuitry”:

*CFLK with non-consumer-replaceable SSL circuitry* means a CFLK with a non-ANSI-standard base that has an SSL light source, driver, heat sink, and intermediate circuitry (such as wiring between a driver and light source), that are not consumer replaceable, *i.e.*, a consumer cannot replace the light source and all components necessary for the starting and stable operation of the light source, without permanently altering the product, and must replace the entire CFLK upon failure.

Under section 2.4 of 10 CFR Part 430, Subpart B, Appendix V1, “other SSL products” are defined as an integrated unit consisting of a light source, driver, heat sink, and intermediate circuitry that uses SSL technology (such as light-emitting diodes or organic light-emitting diodes) and is consumer replaceable in a CFLK. The term does not include LED lamps with ANSI-standard bases. Examples of other SSL products include OLED lamps, LED lamps with non-ANSI-standard bases, such as Zhaga interfaces, and LED light engines. Hence, the SSL light source is an integrated unit that can be removed, tested, and placed back into the CFLK so it is the same product as it was when sold, *i.e.*, consumer replaceable. Therefore, DOE directs manufacturers to remove the SSL light source and test and report its efficacy, *i.e.*, lamp efficacy. In this NOPR to further clarify which CFLKs fall into this category, DOE proposes to change the term “other SSL products” to “CFLK with consumer-replaceable SSL circuitry.” Further,

DOE proposes to modify the definition by specifying that the light sources and all necessary components in these CFLKs can be replaced without permanently altering the product; and specifying that the light sources in these CFLKs do not have an ANSI base. DOE will continue to require the measurement of lamp efficacy of the light sources in these CFLKs. DOE proposes the following definition for “CFLK with consumer-replaceable SSL circuitry:”

*CFLK with consumer-replaceable SSL circuitry* means a CFLK with a non-ANSI-standard base that has an SSL light source, driver, heat sink, and intermediate circuitry (such as wiring between a driver and light source) that are consumer replaceable, *i.e.*, a consumer can replace the light source and all components necessary for the starting and stable operation of the light source as one integrated unit, without permanently altering the product. Examples of CFLKs with consumer-replaceable SSL circuitry include CFLKs that use OLED lamps with non-ANSI-standard bases, LED lamps with non-ANSI-standard bases, such as Zhaga interfaces, and LED light engines.

DOE proposes to continue to allow the luminaire efficacy of CFLKs with non-consumer-replaceable SSL circuitry to be measured without a cover if that cover is consumer replaceable. As such, DOE proposes to also replace the reference of “CFLKs with integrated SSL circuitry” with “CFLKs with non-consumer-replaceable SSL circuitry” in the definition of “cover.” Additionally, in the scope section of appendix V1, DOE proposes to replace the reference of “SSL products other than integrated LED lamps” with “consumer-replaceable SSL circuitry other than integrated LED lamps” and replace the reference of “integrated SSL circuitry” with “non-consumer-replaceable SSL circuitry.”

As noted previously, to clarify the definitions of CFLKs with SSL circuitry, DOE is proposing to specify that CFLKs with non-consumer-replaceable SSL circuitry and CFLKs with consumer-replaceable SSL circuitry have non-ANSI standard bases. Further, to clarify that other SSL light sources with ANSI bases (not integrated LED lamps) must be tested for lamp efficacy, DOE is proposing to specify the efficacy measurement and referenced test procedure for these lamps in the table in appendix V1.

DOE is also proposing to reflect these clarifications in the title of appendix V1. DOE has tentatively concluded that clarifying the terminology and definitions of CFLKs with SSL light sources will not require a manufacturer to change their method of testing and therefore will have no impact on test costs. DOE requests comment on the proposed definitions for “CFLK with consumer-replaceable SSL circuitry” and “CFLK with non-consumer-replaceable SSL circuitry.”

## 2. Photometric Measurements

In this NOPR, DOE is proposing to allow for the use of a goniophotometer to test the lamp efficacy or luminaire efficacy of CFLKs, as applicable.

ALA stated that informal testing conducted by ALA manufacturers indicated that the difference in the measured efficacy using a goniophotometer versus an integrated sphere was inconsequential. ALA further stated that since efficacy differences are negligible, it preferred the use of an integrated sphere because of time efficiency and ease of use. (ALA, No. 4 at p. 2)

DOE has tentatively concluded that difference in measured efficacy using a goniophotometer versus an integrated sphere is not significant and allowing both the

methods would allow manufacturers flexibility in testing. Further, allowing manufacturers to test the performance of CFLKs with either an integrated sphere or goniophotometer aligns the CFLK test procedure with the DOE test procedures for GSFLs, incandescent reflector lamps (“IRLs”), and general service incandescent lamps (“GSILs”). Therefore, DOE is proposing to allow the use of a goniophotometer in appendix V1. DOE has tentatively concluded that allowing the use of both integrating sphere and goniophotometer for photometric measurements will not require a manufacturer to change their method of testing and therefore will have no impact on test costs. DOE requests comment on the allowance of both goniophotometer and integrating sphere methods and any data on the difference in efficacy measurements when testing the same lamp with goniophotometer versus integrating sphere.

#### *D. Proposed Amendments to Appendix V*

DOE proposes to remove appendix V as it is no longer needed. All CFLKs manufactured as of January 21, 2020, must be tested according to current appendix V1. See 80 FR 80209, 80220 and 81 FR 580. Therefore, appendix V is no longer applicable, and removal of this appendix would not result in any change to the currently applicable test procedure.

The CA IOUs and ALA both stated their support for removal of appendix V. (CA IOUs, No. 3 at p.1; ALA, No. 4 at p.1) The CA IOUs stated that under the current energy conservation standards, all CFLKs manufactured as of January 21, 2020, must be tested in accordance with appendix V1, and therefore appendix V is no longer applicable. (CA IOUs, No. 3 at p. 1) ALA suggested DOE replace the language in appendix V with the language in appendix V1. ALA stated that DOE could then eliminate appendix V1 and update any cross references. (ALA, No. 4 at p. 1) Because appendix V is no longer



applicable for the test procedure, DOE is proposing to remove appendix V. DOE also proposes to rename appendix V1 as appendix V. DOE has tentatively concluded that removing an unused appendix will have no impact on test costs.

*E. Proposed Amendments to 10 CFR 429.33, 10 CFR 430.23, and 10 CFR 430.32.*

As specified in section III.C, in the current appendix V1 (proposed to be renamed appendix V), DOE is replacing “other SSL products” and “integrated SSL circuitry” respectively, with “consumer-replaceable SSL circuitry” and “non-consumer-replaceable SSL circuitry.” The terms “other SSL products” and “integrated SSL circuitry” are used in 10 CFR 429.33 which specifies the CFLK sampling plan, represented values, and certification; 10 CFR 430.23(x) which provides references to DOE test procedures for lamps in CFLKs not within the scope of appendix V1; and 10 CFR 430.32(s)(6) which specifies CFLK energy conservation standards. To align with the revised terms in appendix V1, in 10 CFR 429.33, 10 CFR 430.23(x) and 10 CFR 430.32(s)(6), DOE is proposing to replace the terms “other SSL products” and “integrated SSL circuitry” respectively, with “consumer-replaceable SSL circuitry” and “non-consumer-replaceable SSL circuitry.” DOE is also proposing to explicitly state the term “other SSL light sources with ANSI bases (not integrated LED lamps)” in 10 CFR 429.33 and 10 CFR 430.23(x) to clarify instructions for these lamps.

*F. Reporting*

Manufacturers, including importers, must use product-specific certification templates to certify compliance to DOE. For CFLKs, the certification template reflects the general certification requirements specified at 10 CFR 429.12 and the product-specific requirements specified at 10 CFR 429.33. As discussed in the previous

paragraphs, DOE is not proposing to amend the product-specific certification requirements for these products.

#### *G. Test Procedure Costs and Harmonization*

##### *1. Test Procedure Costs and Impact*

In this NOPR, DOE proposes to amend the existing test procedure for CFLKs by (1) updating references to industry standards to their latest versions and incorporating industry standards necessary for executing the test; (2) modifying appendix V1 to allow for the use of a goniophotometer; (3) revising definitions regarding CFLKs with SSL light sources in appendix V1 to clarify the scope and test methods for CFLKs; and (4) removing appendix V, the test procedure that must be used for CFLKs with pin-based sockets that are manufactured on or after January 1, 2007, and prior to January 21, 2020 and renaming appendix V1 as appendix V.

The proposed updates and incorporation of industry standards do not change the method of testing CFLKs, but only make minor changes to certain testing specifications. The changes do not require the purchase of additional equipment or increase test burden, and subsequently do not impact testing costs. The proposed change to allow the use a goniophotometer method is optional and does not require manufacturers to change their current testing methodology, and therefore does not impact testing costs. The proposed revision to definitions regarding CFLKs with SSL light sources only clarifies the scope and test methodology, and therefore does not impact testing costs. Finally, DOE is proposing to remove appendix V because it is obsolete and therefore, its removal does not impact testing costs. DOE has tentatively determined that the amendments proposed in this NOPR would not impact testing costs.

## 2. Harmonization

DOE's established practice is to adopt relevant industry standards as DOE test procedures, unless such methodology would be unduly burdensome to conduct or would not produce test results that reflect the energy efficiency, energy use, water use (as specified in EPCA) or estimated operating costs of that product during a representative average use cycle or period of use. Section 8(c) of appendix A of 10 CFR part 430, subpart C. In cases where the industry standard does not meet EPCA statutory criteria for test procedures, DOE will make modifications through the rulemaking process to these standards as the DOE test procedure.

DOE is proposing to update the latest version of several industry test standards referenced in appendix V1. For the electrical and photometric measurement of CFLKs, DOE is proposing to incorporate by reference IES LM-9-20 and IES LM-79-19. For seasoning instructions for CFLKs, DOE is proposing to incorporate IES LM-54-20. For integrated sphere measurements for CFLKs, DOE is proposing to incorporate IES LM-78-20.

The industry standards DOE proposes to incorporate by reference via amendments described in this NOPR are discussed in further detail in section III.B of this document. DOE requests comment on the benefits and burdens of the proposed updates and additions to industry standards referenced in the test procedure for CFLKs.

### *H. Compliance Date*

EPCA prescribes that, if DOE amends a test procedure, all representations of energy efficiency and energy use, including those made on marketing materials and product labels, must be made in accordance with that amended test procedure, beginning

180 days after publication of such a test procedure final rule in the *Federal Register*. (42 U.S.C. 6293(c)(2))

If DOE were to publish an amended test procedure EPCA provides an allowance for individual manufacturers to petition DOE for an extension of the 180-day period if the manufacturer may experience undue hardship in meeting the deadline. (42 U.S.C. 6293(c)(3)) To receive such an extension, petitions must be filed with DOE no later than 60 days before the end of the 180-day period and must detail how the manufacturer will experience undue hardship. (*Id.*)

#### **IV. Procedural Issues and Regulatory Review**

##### *A. Review Under Executive Order 12866*

The Office of Management and Budget (“OMB”) has determined that this test procedure rulemaking does not constitute “significant regulatory actions” under section 3(f) of Executive Order (“E.O.”) 12866, Regulatory Planning and Review, 58 FR 51735 (Oct. 4, 1993). Accordingly, this action was not subject to review under the Executive order by the Office of Information and Regulatory Affairs (“OIRA”) in OMB.

##### *B. Review Under the Regulatory Flexibility Act*

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of an initial regulatory flexibility analysis (“IRFA”) for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, “Proper Consideration of Small Entities in Agency Rulemaking,” 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are

properly considered during the DOE rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's website: [www.energy.gov/gc/office-general-counsel](http://www.energy.gov/gc/office-general-counsel).

For manufacturers of CFLKs, the Small Business Association ("SBA") has set a size threshold, which defines those entities classified as "small businesses" for the purposes of the statute. DOE used the SBA's small business size standards to determine whether any small entities would be subject to the requirements of the rule. *See* 13 CFR part 121. The size standards are listed by the North American Industry Classification System ("NAICS") code and industry description and are available at [www.sba.gov/document/support--table-size-standards](http://www.sba.gov/document/support--table-size-standards). Manufacturing of CFLKs is classified under NAICS 335210, "Small Electrical Appliance Manufacturing." The SBA sets a threshold of 1,500 employees or less for an entity to be considered as a small business for this category.

To estimate the number of companies that could be small businesses that manufacture CFLKs impacted by this rulemaking, DOE conducted a survey using information from DOE's Compliance Certification Database and previous rulemakings. DOE used information from these sources to create a list of companies that potentially manufacture or sell CFLKs. DOE screened out companies that do not offer products covered by this rulemaking, do not meet the definition of a "small business," or are foreign owned and operated. DOE determined that 31 companies are small businesses that manufacture CFLKs covered by this rulemaking.

DOE has tentatively concluded that the proposed updates to DOE's test procedure for CFLKs do not involve substantive changes to the test setup and methodology and will

not pose any additional test burden or additional test costs for any CFLK manufacturers, large or small.

Therefore, DOE initially concludes that the impacts of the proposed test procedure amendments proposed in this NOPR would not have a “significant economic impact on a substantial number of small entities,” and that the preparation of an IRFA is not warranted. DOE will transmit the certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the Small Business Administration for review under 5 U.S.C. 605(b).

#### *C. Review Under the Paperwork Reduction Act of 1995*

Manufacturers of CFLKs must certify to DOE that their products comply with any applicable energy conservation standards. To certify compliance, manufacturers must first obtain test data for their products according to the DOE test procedures, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including CFLKs. (*See generally* 10 CFR part 429.) The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (“PRA”). This requirement has been approved by OMB under OMB control number 1910-1400. Public reporting burden for the certification is estimated to average 35 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

#### *D. Review Under the National Environmental Policy Act of 1969*

In this NOPR, DOE proposes test procedure amendments that it expects will be used to develop and implement future energy conservation standards for CFLKs. DOE has determined that this rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and DOE's implementing regulations at 10 CFR part 1021. Specifically, DOE has determined that adopting test procedures for measuring energy efficiency of consumer products and industrial equipment is consistent with activities identified in 10 CFR part 1021, appendix A to subpart D, A5 and A6. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

#### *E. Review Under Executive Order 13132*

Executive Order 13132, "Federalism," 64 FR 43255 (Aug. 4, 1999) imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation

process it will follow in the development of such regulations. 65 FR 13735. DOE has examined this proposed rule and has determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this proposed rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

#### *F. Review Under Executive Order 12988*

Regarding the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, “Civil Justice Reform,” 61 FR 4729 (Feb. 7, 1996), imposes on Federal agencies the general duty to adhere to the following requirements: (1) eliminate drafting errors and ambiguity, (2) write regulations to minimize litigation, (3) provide a clear legal standard for affected conduct rather than a general standard, and (4) promote simplification and burden reduction. Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation (1) clearly specifies the preemptive effect, if any, (2) clearly specifies any effect on existing Federal law or regulation, (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction, (4) specifies the retroactive effect, if any, (5) adequately defines key terms, and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires executive agencies to review regulations in light of applicable standards in sections 3(a) and 3(b) to determine whether they are met or it is unreasonable to meet one



or more of them. DOE has completed the required review and determined that, to the extent permitted by law, the proposed rule meets the relevant standards of Executive Order 12988.

#### *G. Review Under the Unfunded Mandates Reform Act of 1995*

Title II of the Unfunded Mandates Reform Act of 1995 (“UMRA”) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Pub. L. 104-4, sec. 201 (codified at 2 U.S.C. 1531). For a proposed regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of \$100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed “significant intergovernmental mandate,” and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at [www.energy.gov/gc/office-general-counsel](http://www.energy.gov/gc/office-general-counsel). DOE examined this proposed rule according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate, nor a mandate that may result in the expenditure of \$100 million or more in any year, so these requirements do not apply.

*H. Review Under the Treasury and General Government Appropriations Act, 1999*

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105-277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This proposed rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

*I. Review Under Executive Order 12630*

DOE has determined, under Executive Order 12630, “Governmental Actions and Interference with Constitutionally Protected Property Rights” 53 FR 8859 (March 18, 1988), that this proposed regulation would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

*J. Review Under Treasury and General Government Appropriations Act, 2001*

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB’s guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE’s guidelines were published at 67 FR 62446 (Oct. 7, 2002). Pursuant to OMB Memorandum M-19-15, Improving Implementation of the Information Quality Act (April 24, 2019), DOE published updated guidelines which are available at [www.energy.gov/sites/prod/files/2019/12/f70/DOE%20Final%20Updated%20IQA%20Guidelines%20Dec%202019.pdf](http://www.energy.gov/sites/prod/files/2019/12/f70/DOE%20Final%20Updated%20IQA%20Guidelines%20Dec%202019.pdf). DOE has reviewed this proposed rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

*K. Review Under Executive Order 13211*

Executive Order 13211, “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,” 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OMB, a Statement of Energy Effects for any proposed significant energy action. A “significant energy action” is defined as any action by an agency that promulgated or is expected to lead to promulgation of a final rule, and that (1) is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (3) is designated by the Administrator of OIRA as a significant energy action. For any proposed significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

The proposed regulatory action to amend the test procedure for measuring the energy efficiency of CFLKs is not a significant regulatory action under Executive Order 12866. Moreover, it would not have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as a significant energy action by the Administrator of OIRA. Therefore, it is not a significant energy action, and, accordingly, DOE has not prepared a Statement of Energy Effects.

*L. Review Under Section 32 of the Federal Energy Administration Act of 1974*

Under section 301 of the Department of Energy Organization Act (Pub. L. 95–91; 42 U.S.C. 7101), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. (15 U.S.C. 788; “FEAA”) Section 32 essentially provides in

relevant part that, where a proposed rule authorizes or requires use of commercial standards, the notice of proposed rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (“FTC”) concerning the impact of the commercial or industry standards on competition.

The proposed modifications to the test procedure for CFLKs would incorporate testing methods contained in certain sections of the following commercial standards:

- (1) ANSI/IES LM-9-20—Approved Method: Electrical and Photometric Measurement of Fluorescent Lamps, Approved February 7, 2020;
- (2) ANSI/ IES LM-54-20— Approved Method: IES Guide to Lamp Seasoning, Approved February 7, 2020;
- (3) IESNA LM-75-01/R12— Goniophotometer Types and Photometric Coordinates, Approved August 4, 2001;
- (4) IES LM-78-17— Approved Method: Total Flux Measurement of Lamps Using an Integrating Sphere, Approved January 9, 2017;
- (5) ANSI/IES LM-78-20— Approved Method: Total Luminous Flux Measurement of Lamps Using an Integrating Sphere Photometer, Approved February 7, 2020; and
- (6) ANSI/IES LM-79-19— Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products, Approved February 28, 2019.

DOE has evaluated these standards and is unable to conclude whether they fully comply with the requirements of section 32(b) of the FEAA (*i.e.*, whether it was

developed in a manner that fully provides for public participation, comment, and review.) DOE will consult with both the Attorney General and the Chairman of the FTC concerning the impact of these test procedures on competition, prior to prescribing a final rule.

*M. Description of Materials Incorporated by Reference*

In this NOPR, DOE proposes to incorporate by reference the test standard published by IES, “ANSI/IES LM-9-20—Approved Method: Electrical and Photometric Measurement of Fluorescent Lamps. IES LM-9-20 is an industry accepted standard that describes methods for taking electrical and photometric measurement of fluorescent lamps. The test procedure proposed in this NOPR references IES LM-9 for testing the performance of fluorescent lamps. IES LM-9 is readily available on IES’s website at [https:// www.ies.org/store](https://www.ies.org/store).

In this NOPR, DOE proposes to incorporate by reference the test standard published by IES, ANSI/IES LM-79-19—Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products. IES LM-79-19 is an industry accepted standard that describes methods for taking electrical and photometric measurements of SSL products. The test procedure proposed in this NOPR references IES LM-79 for testing of CFLKs with SSL circuitry. IES LM-79 is readily available on IES’s website at <https://www.ies.org/store>.

In this NOPR, DOE proposes to incorporate by reference the test standard published by IES, ANSI/IES LM-54-20— Approved Method: IES Guide to Lamp Seasoning. IES LM-54-20 is an industry accepted test standard that specifies a method for seasoning lamps. The test procedure proposed in this NOPR references IES LM-9 for

testing the fluorescent lamps, which in turn references IES LM-54 for seasoning lamps.

IES LM-54 is readily available on IES's website at <https://www.ies.org/store>.

In this NOPR, DOE proposes to incorporate by reference the test standard published by IES, IESNA LM-75-01/R12— Goniophotometer Types and Photometric Coordinates. IESNA LM-75-01/R12 is an industry accepted test standard that specifies goniophotometer types and photometric coordinates. The test procedure proposed in this NOPR references IES LM-79 for testing CFLKs with SSL circuitry, which in turn references IESNA LM-75-01/R12 for general recommendations and requirements on making measurement with goniophotometers. IESNA LM-75-01/R12 is available with the purchase of the lighting library subscription on IES's website at <https://www.ies.org/store>.

In this NOPR, DOE proposes to incorporate by reference the test standard published by IES, ANSI/IES LM-78-20— Approved Method: Total Luminous Flux Measurement of Lamps Using an Integrating Sphere Photometer. IES LM-78-20 is an industry accepted test standard that specifies a method for measuring lumen output in an integrating sphere. The test procedure proposed in this NOPR references IES LM-9 for testing the performance of fluorescent lamps, which in turn references IES LM-78-20 for integrating sphere photometer calibration and measurements. IES LM-78-20 is readily available on IES's website at <https://www.ies.org/store>.

In this NOPR, DOE proposes to incorporate by reference the test standard published by IES, IES LM-78-17— Approved Method: Total Flux Measurement of Lamps Using an Integrating Sphere. IES LM-78-17 is an industry accepted test standard that specifies a method for measuring lumen output in an integrating sphere. The test

procedure proposed in this NOPR references IES LM-79 for testing CFLKs with SSL circuitry, which in turn references IES LM-78-17 for integrating sphere photometer calibration and measurements. IES LM-78-17 is readily available on IES's website at <https://www.ies.org/store>.

## **V. Public Participation**

### *A. Participation in the Webinar*

The time and date of the webinar meeting are listed in the **DATES** section at the beginning of this document. Webinar registration information, participant instructions, and information about the capabilities available to webinar participants will be published on DOE's website:

[www1.eere.energy.gov/buildings/appliance\\_standards/standards.aspx?productid=10](http://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=10).

Participants are responsible for ensuring their systems are compatible with the webinar software.

### *B. Procedure for Submitting Prepared General Statements for Distribution*

Any person who has an interest in the topics addressed in this document, or who is representative of a group or class of persons that has an interest in these issues, may request an opportunity to make an oral presentation at the webinar. Such persons may submit to [ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov). Persons who wish to speak should include with their request a computer file in WordPerfect, Microsoft Word, PDF, or text (ASCII) file format that briefly describes the nature of their interest in this rulemaking and the topics they wish to discuss. Such persons should also provide a daytime telephone number where they can be reached.

Persons requesting to speak should briefly describe the nature of their interest in this rulemaking and provide a telephone number for contact. DOE requests persons selected to make an oral presentation to submit an advance copy of their statements at least two weeks before the webinar. At its discretion, DOE may permit persons who cannot supply an advance copy of their statement to participate, if those persons have made advance alternative arrangements with the Building Technologies Office. As necessary, requests to give an oral presentation should ask for such alternative arrangements.

### *C. Conduct of the Webinar*

DOE will designate a DOE official to preside at the webinar/public meeting and may also use a professional facilitator to aid discussion. The meeting will not be a judicial or evidentiary-type public hearing, but DOE will conduct it in accordance with section 336 of EPCA (42 U.S.C. 6306). A court reporter will be present to record the proceedings and prepare a transcript. DOE reserves the right to schedule the order of presentations and to establish the procedures governing the conduct of the webinar/public meeting. There shall not be discussion of proprietary information, costs or prices, market share, or other commercial matters regulated by U.S. anti-trust laws. After the webinar/public meeting and until the end of the comment period, interested parties may submit further comments on the proceedings and any aspect of the rulemaking.

The webinar/public meeting will be conducted in an informal, conference style. DOE will present summaries of comments received before the webinar/public meeting, allow time for prepared general statements by participants, and encourage all interested parties to share their views on issues affecting this rulemaking. Each participant will be allowed to make a general statement (within time limits determined by DOE), before the



discussion of specific topics. DOE will permit, as time permits, other participants to comment briefly on any general statements.

At the end of all prepared statements on a topic, DOE will permit participants to clarify their statements briefly. Participants should be prepared to answer questions by DOE and by other participants concerning these issues. DOE representatives may also ask questions of participants concerning other matters relevant to this rulemaking. The official conducting the webinar/public meeting will accept additional comments or questions from those attending, as time permits. The presiding official will announce any further procedural rules or modification of the above procedures that may be needed for the proper conduct of the webinar/public meeting.

A transcript of the webinar/public meeting will be included in the docket, which can be viewed as described in the *Docket* section at the beginning of this document. In addition, any person may buy a copy of the transcript from the transcribing reporter.

#### *D. Submission of Comments*

DOE will accept comments, data, and information regarding this proposed rule no later than the date provided in the **DATES** section at the beginning of this proposed rule.<sup>20</sup> Interested parties may submit comments using any of the methods described in the **ADDRESSES** section at the beginning of this document.

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<sup>20</sup> DOE has historically provided a 75-day comment period for test procedure NOPRs pursuant to the North American Free Trade Agreement, U.S.-Canada-Mexico (“NAFTA”), Dec. 17, 1992, 32 I.L.M. 289 (1993); the North American Free Trade Agreement Implementation Act, Pub. L. 103-182, 107 Stat. 2057 (1993) (codified as amended at 10 U.S.C.A. § 2576) (1993) (“NAFTA Implementation Act”); and Executive Order 12889, “Implementation of the North American Free Trade Agreement,” 58 FR 69681 (Dec. 30, 1993). However, on July 1, 2020, the Agreement between the United States of America, the United Mexican States, and the United Canadian States (“USMCA”), Nov. 30, 2018, 134 Stat. 11 (*i.e.*, the successor to NAFTA), went into effect, and Congress’s action in replacing NAFTA through the USMCA Implementation Act, 19 U.S.C. 4501 *et seq.* (2020), implies the repeal of E.O. 12889 and its 75-day

*Submitting comments via [www.regulations.gov](http://www.regulations.gov).* The [www.regulations.gov](http://www.regulations.gov) web page will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. Persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to [www.regulations.gov](http://www.regulations.gov) information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information (“CBI”)). Comments submitted through [www.regulations.gov](http://www.regulations.gov) cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section.

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comment period requirement for technical regulations. Thus, the controlling laws are EPCA and the USMCA Implementation Act. Consistent with EPCA’s public comment period requirements for consumer products, the USMCA only requires a minimum comment period of 60 days. Consequently, DOE now provides a 60-day public comment period for test procedure NOPRs.

DOE processes submissions made through *www.regulations.gov* before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that *www.regulations.gov* provides after you have successfully uploaded your comment.

*Submitting comments via email.* Comments and documents submitted via email also will be posted to *www.regulations.gov*. If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information on a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments

Include contact information each time you submit comments, data, documents, and other information to DOE. No faxes will be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, written in English and free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

*Campaign form letters.* Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

*Confidential Business Information.* Pursuant to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email two well-marked copies: one copy of the document marked confidential including all the information believed to be confidential, and one copy of the document marked non-confidential with the information believed to be confidential deleted. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

#### *E. Issues on Which DOE Seeks Comment*

Although DOE welcomes comments on any aspect of this proposal, DOE is particularly interested in receiving comments and views of interested parties concerning the following issues:

- (1) DOE requests comment on its assessments of the impacts of incorporating by reference IES LM-9-20, IES LM-54-20, IESNA LM-75-01/R12, IES LM-79-19, IES LM-78-20, and IES LM-78-17 for appendix V1. See section III.B of this document.
- (2) DOE requests comment on the proposed definitions for "CFLK with consumer-replaceable SSL circuitry" and "CFLK with non-consumer-replaceable SSL circuitry." See section III.C.1 of this document.
- (3) DOE requests comment on the allowance of both goniophotometer and integrating sphere methods and any data on the difference in efficacy

measurements when testing the same lamp with a goniophotometer versus an integrating sphere. See section III.C.2 of this document.

- (4) DOE requests comment on the benefits and burdens of the proposed updates and additions to industry standards referenced in the test procedure for CFLKs. See section III.G of this document.

## **VI. Approval of the Office of the Secretary**

The Secretary of Energy has approved publication of this notice of proposed rulemaking and announcement of public meeting.

### **List of Subjects**

#### **10 CFR Part 429**

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Intergovernmental relations, Reporting and recordkeeping requirements, Small businesses.

#### **10 CFR Part 430**

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Incorporation by reference, Intergovernmental relations, Small businesses.

## Signing Authority

This document of the Department of Energy was signed on March 1, 2022, by Kelly J. Speakes-Backman, Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on March 2, 2022.

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Treena V. Garrett,  
Federal Register Liaison Officer,  
U.S. Department of Energy.

For the reasons stated in the preamble, DOE is proposing to amend parts 429 and 430 of chapter II of title 10, Code of Federal Regulations as set forth below:

**PART 429--CERTIFICATION, COMPLIANCE, AND ENFORCEMENT FOR  
CONSUMER PRODUCTS AND COMMERCIAL AND INDUSTRIAL  
EQUIPMENT**

1. The authority citation for part 429 continues to read as follows:

**Authority:** 42 U.S.C. 6291-6317; 28 U.S.C. 2461 note.

**§429.33 [Amended]**

2. Amend §429.33 by:

- a. Removing “other SSL lamps (not integrated LED lamps)” and adding in its place “consumer-replaceable SSL circuitry (not integrated LED lamps) and other SSL lamps that have an ANSI standard base and are not integrated LED lamps” in paragraph (a)(3)(i)(F); and
- b. Removing “integrated SSL circuitry” and adding in its place “non-consumer-replaceable SSL circuitry” in paragraph (a)(3)(ii).

**PART 430--ENERGY CONSERVATION PROGRAM FOR CONSUMER  
PRODUCTS**

3. The authority citation for part 430 continues to read as follows:

**Authority:** 42 U.S.C. 6291–6309; 28 U.S.C. 2461 note.

4. Amend §430.3 by:

- a. Revising paragraph (a);

b. In paragraph (p)(2), removing the text “appendices R, V, and V1” and adding in its place, “appendix R”;

c. Removing paragraph (p)(13);

d. Redesignating paragraphs (p)(4) through (20) as follows:

OLD	NEW
paragraphs (p)(4) through (10)	paragraphs (p)(5) through (11)
paragraphs (p)(11) and (12)	paragraphs (p)(13) and (14)
paragraph (p)(14)	paragraph (p)(15)
paragraph (p)(15)	paragraph (p)(17)
paragraph (p)(16)	paragraph (p)(20)
paragraph (p)(17)	paragraph (p)(21)
paragraphs (p)(18) through (20)	paragraphs (p)(23) through (25)

e. Adding new paragraphs (p)(4), (12), (16), (18), and (19);

f. In newly redesignated paragraph (p)(20), removing the text “appendices V1 and BB” and adding, in its place, “appendix BB”; and

g. Adding new paragraph (p)(22).

The revision and additions read as follows:

**§430.3 Materials incorporated by reference.**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the U.S. Department of Energy (DOE) must publish a document in the Federal Register and the material must be available to the public. All approved material is available for inspection at the DOE and at the National Archives and Records Administration (NARA). Contact DOE at: the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, Sixth Floor, 950 L'Enfant Plaza SW, Washington, DC



20024, (202) 586-9127, *Buildings@ee.doe.gov*,

<https://www.energy.gov/eere/buildings/appliance-and-equipment-standards-program>. For information on the availability of this material at NARA, email: *fr.inspection@nara.gov*, or go to: [www.archives.gov/federal-register/cfr/ibr-locations.html](http://www.archives.gov/federal-register/cfr/ibr-locations.html). The material may be obtained from the sources in the following paragraphs of this section.

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(p) \* \* \*

(4) ANSI/IES LM-9-20 (“IES LM-9-20”), Approved Method: Electrical and Photometric Measurements of Fluorescent Lamps, approved February 7, 2020; IBR approved for appendix V to subpart B.

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(12) ANSI/IES LM-54-20 (“IES LM-54-20”), Approved Method: IES Guide to Lamp Seasoning, approved February 7, 2020; IBR approved for appendix V to subpart B.

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(16) IESNA LM-75-2001/R12, Goniophotometer Types and Photometric Coordinates, approved August 4, 2001; IBR approved for appendix V to subpart B.

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(18) IES LM-78-17, Approved Method: Total Flux Measurement of Lamps Using an Integrating Sphere,” approved January 9, 2017; IBR approved for appendix V to subpart B.

(19) ANSI/IES LM-78-20 (“IES LM-78-20”), Approved Method: Total Luminous Flux Measurement of Lamps Using an Integrating Sphere Photometer, approved February 7, 2020; IBR approved for appendix V to subpart B.

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(22) ANSI/IES LM-79-019 (“IES LM-79-19”), Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products, approved February 28, 2019; IBR approved for appendix V to subpart B.

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5. Amend §430.23 by:

- a. Removing paragraph (x)(1);
- b. Redesignating paragraph (x)(2) as paragraph (x)(1);
- c. Revising newly designated paragraph (x)(1)(v); and
- d. Reserving paragraph (x)(2).

The revision reads as follows:

**§430.23 Test procedures for the measurement of energy and water consumption.**

\* \* \* \* \*

(x) \* \* \*

(1) \* \* \*

(v) For a ceiling fan light kit packaged with other fluorescent lamps (not compact fluorescent lamps or general service fluorescent lamps), packaged with consumer-replaceable SSL circuitry (not integrated LED lamps), packaged with non-consumer-replaceable SSL circuitry, or packaged with other SSL lamps that have an ANSI standard base (not integrated LED lamps), measure efficacy in accordance with section 3 of appendix V of this subpart for each lamp basic model, consumer-replaceable SSL circuitry basic model, or non-consumer-replaceable SSL circuitry basic model.

\* \* \* \* \*

**Appendix V to Subpart B of Part 430 [Removed]**

6. Remove appendix V to subpart B of part 430.

## **Appendix V1 to Subpart B of Part 430 [Redesignated]**

7. Redesignate appendix V1 to subpart B of part 430 as appendix V to subpart B of part 430.

8. Revise newly redesignated appendix V to subpart B of part 430 to read as follows:

### **Appendix V to Subpart B of Part 430 - Uniform Test Method for Measuring the Energy Consumption of Ceiling Fan Light Kits Packaged With Other Fluorescent Lamps (not Compact Fluorescent Lamps or General Service Fluorescent Lamps), Packaged With Consumer-Replaceable SSL Circuitry (not Integrated LED Lamps), Packaged With Non-Consumer-Replaceable SSL Circuitry, or Packaged With Other SSL lamps that have an ANSI standard base (not Integrated LED Lamps)**

Any representations about the energy use or efficiency of any ceiling fan light kit packaged with fluorescent lamps other than compact fluorescent lamps or general service fluorescent lamps, packaged with consumer-replaceable SSL circuitry other than integrated LED lamps, or packaged with non-consumer-replaceable SSL circuitry, or packaged with SSL lamps that have an ANSI standard base (not integrated LED lamps) made on or after the compliance date of any amended energy conservation standards must be based on testing pursuant to this appendix. Manufacturers may make representations based on testing in accordance with this appendix prior to the compliance date of any amended energy conservation standards, provided that such representations demonstrate compliance with the amended energy conservation standards.

0. Incorporation by Reference. DOE incorporated by reference in §430.3, the entire standard for: IES LM-9-20, IES LM-54-20, IES LM-75-01/R12, IES LM-78-17, IES LM-78-20, and IES LM-79-19; however, only enumerated

provisions of IES LM-9-20 and IES LM-79-19 are applicable to this appendix as follows:

(1) IES LM-9-20 as referenced by section 3 of this appendix

(i) Section 4.0 “Ambient and Physical Conditions”.

(ii) Section 5.0 “Electrical Conditions”.

(iii) Section 6.0 “Lamp Test Procedures”.

(iv) Section 7.0 “Photometric Test Procedures”.

(2) IES LM-79-19 as referenced by section 3 of this appendix

(i) Section 4.0 “Physical and Environmental Test Conditions”.

(ii) Section 5.0 “Electrical Test Conditions”.

(iii) Section 6.0 “Test Preparation”.

(iv) Section 7.0 “Total Luminous Flux and Integrated Optical Measurements”.

**1. *Scope:*** This appendix establishes the test requirements to measure the energy efficiency of all ceiling fan light kits (CFLKs) packaged with fluorescent lamps other than compact fluorescent lamps (CFLs) or general service fluorescent lamps (GSFLs), packaged with consumer-replaceable solid-state lighting (SSL) circuitry (not integrated light-emitting diode [LED] lamps), packaged with non-consumer-replaceable SSL circuitry, or packaged with SSL lamps that have an American National Standards Institute (ANSI) standard base (not integrated LED lamps).

## **2. *Definitions***

2.1. *CFLK with non-consumer-replaceable SSL circuitry* means a CFLK with a non-ANSI-standard base that has an SSL light source, driver, heat sink, and intermediate circuitry (such as wiring between a driver and light source), that are not consumer

replaceable, *i.e.*, a consumer cannot replace the light source and all components necessary for the starting and stable operation of the light source, without permanently altering the product, and must replace the entire CFLK upon failure.

2.2. *CFLK with consumer-replaceable SSL circuitry* means a CFLK with a non-ANSI-standard base that has an SSL light source, driver, heat sink, and intermediate circuitry (such as wiring between a driver and light source) that are consumer replaceable, *i.e.*, a consumer can replace the light source and all components necessary for the starting and stable operation of the light source as one integrated unit, without permanently altering the product. Examples of CFLKs with consumer-replaceable SSL circuitry include CFLKs that use OLED lamps with non-ANSI-standard bases, LED lamps with non-ANSI-standard bases, such as Zhaga interfaces, and LED light engines.

2.3. *Covers* means materials used to diffuse or redirect light produced by an SSL light source in CFLKs with non-consumer-replaceable SSL circuitry.

2.4. *Other (non-CFL and non-GSFL) fluorescent lamp* means a low-pressure mercury electric-discharge lamp in which a fluorescing coating transforms some of the ultraviolet energy generated by the mercury discharge into light, including but not limited to circline fluorescent lamps, and excluding any compact fluorescent lamp and any general service fluorescent lamp.

2.5. *Solid-State Lighting (SSL)* means technology where light is emitted from a solid object - a block of semiconductor - rather than from a filament or plasma, as in the case of incandescent and fluorescent lighting. This includes inorganic light-emitting diodes (LEDs) and organic light-emitting diodes (OLEDs).

### **3. Test Conditions and Measurements**

For any CFLK that utilizes consumer replaceable lamps or consumer-replaceable SSL circuitry, measure the lamp efficacy of each basic model of lamp or SSL light source packaged with the CFLK. For any CFLK only with non-consumer-replaceable SSL circuitry, measure the luminaire efficacy of the CFLK. For any CFLK that includes consumer replaceable lamps or consumer-replaceable SSL circuitry and non-consumer-replaceable SSL circuitry, measure both the lamp efficacy of each basic model of lamp or consumer-replaceable SSL light source packaged with the CFLK and the luminaire efficacy of the CFLK with all consumer replaceable lamps or consumer-replaceable SSL light sources removed. Take measurements at full light output. For each test, use the test procedures in the table in this section. CFLKs with non-consumer-replaceable SSL circuitry and consumer replaceable covers may be measured with their covers removed but must otherwise be measured according to the table in this section.

<b>Lighting technology</b>	<b>Lamp or luminaire efficacy measured</b>	<b>Referenced test procedure</b>
Other (non-CFL and non-GSFL) fluorescent lamps	Lamp Efficacy	IES LM-9-20, sections 4-7 and corresponding subsections including references to IES LM-54-20 (lamp seasoning); IES-LM-78-20 (integrating sphere measurements).
CFLKs with consumer-replaceable SSL circuitry	Lamp Efficacy	IES LM-79-19, sections 4-7 and corresponding subsections including references to IES-LM-78-17 (integrating sphere measurements); IES LM-75-01/R12 (goniophotometer measurements).
CFLKs with non-consumer-replaceable SSL circuitry	Luminaire Efficacy	IES LM-79-19, sections 4-7 and corresponding subsections including references to IES-LM-78-17 (integrating sphere measurements); IES LM-75-01/R12 (goniophotometer measurements).
Other SSL lamps that have an ANSI standard base and are not integrated LED lamps.	Lamp Efficacy	IES LM-79-19, sections 4-7 and corresponding subsections including references to

Lighting technology	Lamp or luminaire efficacy measured	Referenced test procedure
		IES-LM-78-17 (integrating sphere measurements); IES LM-75-01/R12 (goniophotometer measurements).

9. Amend §430.32 by revising paragraph (s)(6).

**§430.32 Energy and water conservation standards and their compliance dates.**

\* \* \* \*

(s) \* \*

(6) Ceiling fan light kits manufactured on or after January 21, 2020 must be packaged with lamps to fill all sockets, and each basic model of lamp packaged with the basic model of CFLK, each basic model of consumer-replaceable SSL circuitry packaged with the basic model of CFLK, and each basic model of non-consumer-replaceable SSL circuitry in the CFLK basic model shall meet the requirements shown in paragraphs (s)(6)(i) and (ii) of this section:

Lumens <sup>1</sup>	Minimum required efficacy (lm/W)
(i) <120	50
(ii) ≥120	$(74.0 - 29.42 \times 0.9983^{\text{lumens}})$

<sup>1</sup> Use the lumen output for each basic model of lamp packaged with the basic model of CFLK, each basic model of consumer-replaceable SSL circuitry packaged with the basic model of CFLK, or each basic model of non-consumer-replaceable SSL in the CFLK basic model to determine the applicable standard.

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